

**CPC****COOPERATIVE PATENT CLASSIFICATION****D01F****CHEMICAL FEATURES IN THE MANUFACTURE OF ARTIFICIAL FILAMENTS, THREADS, FIBRES, BRISTLES OR RIBBONS; APPARATUS SPECIALLY ADAPTED FOR THE MANUFACTURE OF CARBON FILAMENTS****D01F 1/00****General methods for the manufacture of artificial filaments or the like**

- D01F 1/02 . Addition of substances to the spinning solution or to the melt ([addition of substances to viscose D01F 2/08 to D01F 2/20](#))
- D01F 1/04 .. Pigments
- D01F 1/06 .. Dyes
- D01F 1/07 .. for making fire- or flame-proof filaments
- D01F 1/08 .. for forming hollow filaments
- D01F 1/09 .. for making electroconductive or anti-static filaments
- D01F 1/10 .. Other agents for modifying properties
- D01F 1/103 ... {[Agents inhibiting growth of micro-organisms](#)}
- D01F 1/106 ... {[Radiation shielding agents, e.g. absorbing, reflecting agents](#)}

**D01F 2/00****Monocomponent artificial filaments or the like of cellulose or cellulose derivatives; Manufacture thereof**

- D01F 2/02 . from solutions of cellulose in acids, bases or salts
- D01F 2/04 .. from cuprammonium solutions
- D01F 2/06 . from viscose ([preparation of alkali cellulose C08B](#))
- D01F 2/08 .. Composition of the spinning solution or the bath ([preparing or dissolving cellulose xanthate C08B](#))
- D01F 2/10 ... Addition to the spinning solution or spinning bath of substances which exert their effect equally well in either
- D01F 2/12 ... Addition of delustering agents to the spinning solution
- D01F 2/14 .... Addition of pigments
- D01F 2/16 ... Addition of dyes to the spinning solution
- D01F 2/18 ... Addition to the spinning solution of substances to influence ripening
- D01F 2/20 ... for the manufacture of hollow threads
- D01F 2/22 .. by the dry spinning process
- D01F 2/24 . from cellulose derivatives
- D01F 2/26 .. from nitrocellulose
- D01F 2/28 .. from organic cellulose esters or ethers, e.g. cellulose acetate
- D01F 2/30 ... by the dry spinning process

**D01F 4/00 Monocomponent artificial filaments or the like of proteins; Manufacture thereof**

- D01F 4/02 . from fibroin
- D01F 4/04 . from casein
- D01F 4/06 . from globulins, e.g. groundnut protein

**D01F 6/00 Monocomponent artificial filaments or the like of synthetic polymers; Manufacture thereof**

- D01F 6/02 . from homopolymers obtained by reactions only involving carbon-to-carbon unsaturated bonds
  - D01F 6/04 .. from polyolefins
    - D01F 6/06 ... from polypropylene
  - D01F 6/08 .. from polymers of halogenated hydrocarbons
    - D01F 6/10 ... from polyvinyl chloride or polyvinylidene chloride
    - D01F 6/12 ... from polymers of fluorinated hydrocarbons
  - D01F 6/14 .. from polymers of unsaturated alcohols, e.g. polyvinyl alcohol, or of their acetals or ketals
  - D01F 6/16 .. from polymers of unsaturated carboxylic acids or unsaturated organic esters, e.g. polyacrylic esters, polyvinyl acetate
  - D01F 6/18 .. from polymers of unsaturated nitriles, e.g. polyacrylonitrile, polyvinylidene cyanide
  - D01F 6/20 .. from polymers of cyclic compounds with one carbon-to-carbon double bond in the side chain
    - D01F 6/22 ... from polystyrene
  - D01F 6/24 .. from polymers of aliphatic compounds with more than one carbon-to-carbon double bond
  - D01F 6/26 .. from other polymers
- D01F 6/28 . from copolymers obtained by reactions only involving carbon-to-carbon unsaturated bonds

**NOTE**

For the purposes of groups [D01F 6/30](#) to [D01F 6/96](#), the percentage for determining the major constituent is expressed in mole percent.

- D01F 6/30 .. comprising olefins as the major constituent
- D01F 6/32 .. comprising halogenated hydrocarbons as the major constituent
- D01F 6/34 .. comprising unsaturated alcohols, acetals or ketals as the major constituent
- D01F 6/36 .. comprising unsaturated carboxylic acids or unsaturated organic esters as the major constituent
- D01F 6/38 .. comprising unsaturated nitriles as the major constituent
- D01F 6/40 .. Modacrylic fibres, i.e. containing 35 to 85% acrylonitrile
- D01F 6/42 .. comprising cyclic compounds containing one carbon-to-carbon double bond in the side chain as major constituent

- D01F 6/44 . from mixtures of polymers obtained by reactions only involving carbon-to-carbon unsaturated bonds as major constituent with other polymers or low-molecular-weight compounds
- D01F 6/46 .. of polyolefins
- D01F 6/48 .. of polymers of halogenated hydrocarbons
- D01F 6/50 .. of polyalcohols, polyacetals or polyketals
- D01F 6/52 .. of polymers of unsaturated carboxylic acids or unsaturated esters
- D01F 6/54 .. of polymers of unsaturated nitriles
- D01F 6/56 .. of polymers of cyclic compounds with one carbon-to-carbon double bond in the side chain
  
- D01F 6/58 . from homopolycondensation products
- D01F 6/60 .. from polyamides (from polyamino acids or polypeptides [D01F 6/68](#))
- D01F 6/605 ... {from aromatic polyamides}
- D01F 6/62 .. from polyesters
- D01F 6/625 ... {derived from hydroxy-carboxylic acids, e.g. lactones}
- D01F 6/64 ... from polycarbonates
- D01F 6/66 .. from polyethers
- D01F 6/665 ... {from polyetherketones, e.g. PEEK}
- D01F 6/68 .. from polyaminoacids or polypeptides
- D01F 6/70 .. from polyurethanes
- D01F 6/72 .. from polyureas
- D01F 6/74 .. from polycondensates of cyclic compounds, e.g. polyimides, polybenzimidazoles
- D01F 6/76 .. from other polycondensation products
- D01F 6/765 ... {from polyarylene sulfides}
  
- D01F 6/78 . from copolycondensation products
- D01F 6/80 .. from copolyamides
- D01F 6/805 ... {from aromatic copolyamides}
- D01F 6/82 .. from polyester amides or polyether amides
- D01F 6/84 .. from copolyesters
- D01F 6/86 .. from polyetheresters
  
- D01F 6/88 . from mixtures of polycondensation products as major constituent with other polymers or low-molecular-weight compounds
- D01F 6/90 .. of polyamides
- D01F 6/905 ... {of aromatic polyamides}
- D01F 6/92 .. of polyesters
- D01F 6/94 .. of other polycondensation products
  
- D01F 6/96 . from other synthetic polymers
  
- D01F 8/00** **Conjugated, i.e. bi- or multi-component, artificial filaments or the like; Manufacture thereof**

- D01F 8/02 . from cellulose, cellulose derivatives, or proteins
- D01F 8/04 . from synthetic polymers
- D01F 8/06 .. with at least one polyolefin as constituent
- D01F 8/08 .. with at least one polyacrylonitrile as constituent
- D01F 8/10 .. with at least one other macromolecular compound obtained by reactions only involving carbon-to-carbon unsaturated bonds as constituent
- D01F 8/12 .. with at least one polyamide as constituent
- D01F 8/14 .. with at least one polyester as constituent
- D01F 8/16 .. with at least one other macromolecular compound obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds as constituent
- D01F 8/18 . from other substances
- D01F 9/00 Artificial filaments or the like of other substances; Manufacture thereof; Apparatus specially adapted for the manufacture of carbon filaments**
- D01F 9/02 . of reaction products of rubber with acids or acid anhydrides, e.g. sulfur dioxide
- D01F 9/04 . of alginates
- D01F 9/08 . of inorganic material (from softened glass, minerals or slags [C03B 37/00](#); { obtaining ceramic fibres [C04B 35/62227](#); incandescent bodies F21H, [H01K 1/02](#), [H01K 3/02](#))
- D01F 9/10 .. by decomposition of organic substances ([D01F 9/12](#) takes precedence)
- D01F 9/12 .. Carbon filaments; Apparatus specially adapted for the manufacture thereof {(with fullerene structure, e.g. carbon nanotubes [C01B 31/0206](#))}
- D01F 9/127 ... by thermal decomposition of hydrocarbon gases or vapours { or other carbon-containing compounds in the form of gas or vapour, e.g. carbon monoxide, alcohols}
  - D01F 9/1271 .... {Alkanes or cycloalkanes}
  - D01F 9/1272 ..... {Methane}
  - D01F 9/1273 .... {Alkenes, alkynes}
  - D01F 9/1274 ..... {Butadiene}
  - D01F 9/1275 ..... {Acetylene}
  - D01F 9/1276 .... {Aromatics, e.g. toluene}
  - D01F 9/1277 .... {Other organic compounds}
  - D01F 9/1278 .... {Carbon monoxide}
  - D01F 9/133 .... Apparatus therefor
- D01F 9/14 ... by decomposition of organic filaments
  - D01F 9/145 .... from pitch or distillation residues
    - D01F 9/15 ..... from coal pitch
    - D01F 9/155 ..... from petroleum pitch
  - D01F 9/16 .... from products of vegetable origin or derivatives thereof, e.g. from cellulose acetate ([D01F 9/18](#) takes precedence)
  - D01F 9/17 ..... from lignin

- D01F 9/18 . . . . from proteins, e.g. from wool
- D01F 9/20 . . . . from polyaddition, polycondensation or polymerisation products  
([D01F 9/145](#), [D01F 9/16](#), [D01F 9/18](#) take precedence)
- D01F 9/21 . . . . . from macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- D01F 9/22 . . . . . from polyacrylonitriles
- D01F 9/225 . . . . . {from stabilised polyacrylonitriles}
- D01F 9/24 . . . . . from macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- D01F 9/245 . . . . . {from polyurethanes}
- D01F 9/26 . . . . . from polyesters
- D01F 9/28 . . . . . from polyamides
- D01F 9/30 . . . . . from aromatic polyamides
- D01F 9/32 . . . . Apparatus therefor
- D01F 9/322 . . . . . {for manufacturing filaments from pitch}
- D01F 9/324 . . . . . {for manufacturing filaments from products of vegetable origin}
- D01F 9/326 . . . . . {for manufacturing filaments from proteins}
- D01F 9/328 . . . . . {for manufacturing filaments from polyaddition, polycondensation, or polymerisation products}
- D01F 11/00** **Chemical after-treatment of artificial filaments or the like during manufacture** ({of artificial filaments from softened glass, minerals or slags [C03C](#); from ceramics [C04B](#)}; finishing [D06M](#))
- D01F 11/02 . . of cellulose, cellulose derivatives, or proteins
- D01F 11/04 . . of synthetic polymers
- D01F 11/06 . . . of macromolecular compounds obtained by reactions only involving carbon-to-carbon unsaturated bonds
- D01F 11/08 . . . of macromolecular compounds obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds
- D01F 11/10 . . of carbon
- D01F 11/12 . . . with inorganic substances {Intercalation}
- D01F 11/121 . . . {Halogen, halogenic acids or their salts}
- D01F 11/122 . . . {Oxygen, oxygen-generating compounds (anode oxidising [D01F 11/16](#))}
- D01F 11/123 . . . {Oxides}
- D01F 11/124 . . . {Boron, borides, boron nitrides}
- D01F 11/125 . . . {Carbon}
- D01F 11/126 . . . {Carbides (boron-comprising compounds [D01F 11/124](#); nitrogen carbide [D01F 11/128](#))}
- D01F 11/127 . . . {Metals (metal depositing by electrolysis [D01F 11/16](#); metal alloys with reinforcing carbon fibres [C22C 49/14](#))}
- D01F 11/128 . . . {Nitrides, nitrogen carbides (nitrogen borides [D01F 11/124](#))}
- D01F 11/129 . . . { Intercalated carbon- or graphite fibres}
- D01F 11/14 . . . with organic compounds, e.g. macromolecular compounds

D01F 11/16 . . . by physicochemical methods

**D01F 13/00 Recovery of starting material, waste material or solvents during the manufacture of artificial filaments or the like**

D01F 13/02 . . of cellulose, cellulose derivatives or proteins {(recovery of sodium sulfate from coagulation baths [C01D 5/006](#))}

D01F 13/04 . . of synthetic polymers